of industrial medicine and the prevention of commercialization of the practice of industrial medicine and surgery.

The standard of practice for any group is dependent upon the personal excellence of the individuals composing the group; going one step farther back, these ideals and principles are largely developed and started in educational institutions; in the final analysis the responsibility for the type of industrial work largely rests with those who are also responsible for the grade of work done in any medical specialty.

Only a thorough cooperation between industries, medical schools, physicians, and students, will secure the desired results.

THE LURE OF MEDICAL HISTORY

GALEN*

By CLIFFORD W. MACK, M. D.
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THE name of Galen has come down to us in medical history as one of the early Greeks who exerted a great influence upon medical thought and practice. He takes an equal place, if not a superior one, with Hippocrates as the father of medicine. Hippocrates is usually given that honor, but it seems to be proven that many of the treatises collected under his name cannot really be attributed to his authorship. Galen refers to him in many of his writings and wrote several commentaries upon them. It is asserted that the Hippocratic oath was not promulgated by Hippocrates the second, the author, but was only ascribed to him by the ancients. Mercurialis ascribed it to other persons, using as one proof that the oath prohibits the induction of abortion, and from a treatise by Hippocrates cites a case of a patient who was aborted under his own direction and prescription. It has never been determined whether the oath was written before or after Hippocrates' time, but probably the latter is correct.

In contrast to Hippocrates, the writings of Galen, of which he is definitely proven as the author, are very numerous. He was not only famous in his own time, but his teachings dominated medical thought for centuries. There must be some merit in his works, otherwise it would be difficult to understand that they were standard for over twelve centuries and any departure from them was considered heretical. Five hundred years after his time he was held in such veneration as to be regarded by many as a god and religious worship accorded him. He was copied by the Arabian physicians and, in spite of virulent opponents, the greater part of the medical world held his beliefs. Galen was compelled to oppose a long tradition of medical thought in vogue during his time. A succession of learned men had preserved in one family—that of Asclepiades—all that was then known of medicine. These ideas were based upon superstition, healing by incantations, etc., and were passed on largely by word of mouth. They were gathered together first as a written record by Hippocrates.

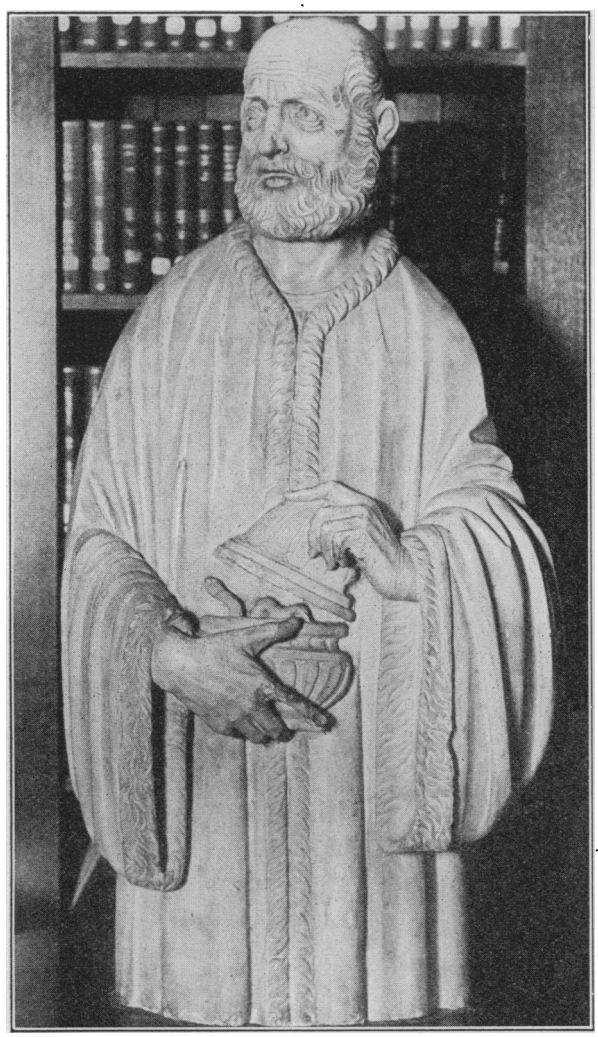
In the early days medicine was subject to much speculation and produced many sects which attacked each other virulently. At the time of Galen there were six prominent sects. He refused to be a follower of any but remained independent in his thought choosing from all, those things which seemed to him proven by judgment and experience. Galen did not spare Hippocrates in his criticism of the early medical writers although he gives him credit for laying the foundation of true medical knowledge.

Galen was born in Pergamos in Asia Minor—a city in which there was a temple dedicated to Esculapius, about 130 A. D. in the reign of Adrian. He lived to be 100 years old. Galen's father was a wealthy, educated man, acquainted with literature, philosophy, astronomy, geometry, and architecture. It can therefore be assumed that he would be zealous in the education of his son, imparting to him all the advantages to be obtained in the educational centers known to the early Greeks. Galen studied in the School of Philosophers, of which there were many in those days, such as the Stoics, Academicians, Peripatetics and Epicureans, and then began the study of medicine at the early age of seventeen. In his youth he traveled much to acquaint himself with medicine in different countries, visiting Alexandria (in Egypt), Cilicia, Palestine, Crete, Cypress, and the Isle of Lemnos. At the age of twenty-eight he returned to the place of his birth to begin the practice of medicine. At the age of thirty-two he went to Rome, but was driven out in a few years by the jealousy of other physicians. During his stay Galen apparently made his name well known in Rome because he had become an intimate of persons of rank and acquired a large reputation. It is supposed that he was about thirty-seven years of age when he left Rome, returning to Pergamos. He was recalled by Marcus Aurelius and continued throughout the rest of his life in or near the Roman capitol.

The writings of Galen have come down to us only in the Greek and Latin. It is probably known to but few that there is no complete English translation. The writings consist of nearly seven hundred books or treatises, of which several are lost. The original is in Greek; different portions have been translated into Latin and these have passed through numerous editions. The principal and best of the translations are those published at Venice by Juntas and at Basel by Forbinius. The writings of Galen are epitomized from the original translations by an American, John Redman Coxe, M. D., member of the Royal Medical Society, and his work was published in Philadelphia in 1846. He possessed Greek editions and also editions in the Latin, the third of 1556, the sixth of 1586, the ninth of 1609—all Venice copies of the Basel edition of 1549.

This book by Coxe is worth perusal by the physician who wishes to know some of the work of which we today enjoy the heritage. Coxe states that the Latin translators have divided the writings of Galen into seven classes. These classes are preceded by introductory books giving a general idea of the work to follow. The latter were expected to be used first by students and hence

* Read before the Galen Club of Oakland, December 23, 1927.



GALEN
A statue of Carrara marble made in Italy in the year 1600 by Tullio Lombardi. Presented to the Barlow Medical Library, Los Angeles, by Dr. W. Jarvis Barlow in 1924.

they were called by Galen "Tyrones." The seven classes consist of: (1) Physiology, discussing the nature of the human body, its elements, temperaments, humors, structure, the anatomy and use of various parts. (2) Hygiene, the means of preserving health on air, food, drink, sleep, rest, motion, repletion, abstinence, affections and emotions of the mind. Much is said also of the powers of food, as healthy or unhealthy state of fluids; some mental affections are also considered; some gymnastic exercises. (3) Etiological, explanatory of diseases, their symptoms and causes. (4) Semeiotics, the division of medicine that is connected with the symptoms which distinguish particular diseases and the parts affected by which we are enabled to prognosticate. (5) Pharmacy, preparations of remedies. (6) Has to do with the methods of treatment, scarification, phlebotomy. (7) Therapeutics, pertaining to the practice of medicine, diet, remedies for each disease—principle and practice of surgery, embracing the treatment of fractures, luxations, and bandaging.

In the mass of material there are a few outstanding features which show the thoughts and principles that guided Galen, and some of his actual research work. He emphasizes the importance of cultivating the mind in the quest of art rather than toiling in the quest for riches. In one passage, however, he is explicit in his discussion of fees, stating that this should be agreed upon in advance before undertaking a long course of treatment unless an emergency dictated otherwise.

He devoted a book to the subject of "A Good Physician Must Also Be a Philosopher," mentioning how important it is for medical men to have communion with learned people, thereby increasing their value in the profession. The discussion of sects of medicine is very extensive and Galen brings clearly to the fore the thought which is today the governing principle of medicine—that material from all the sciences should be used in our art and practice; that everything accepted should be founded on truth, that it should be useful and conformable to established principles. The mere authority or dogma of the individual is not acceptable except upon the foundation of investigation by experiment.

Galen is credited by Coxe as the first real anatomist. He attached much importance to this subject in the practice of surgery because in the extraction of darts, excision of abscesses and in war surgery it was important to know the location of the veins and arteries. He also gave great importance to the study of osteology. He differentiated sensory and motor nerves and Galen was well versed in brain anatomy, taking notice of the ventricles, the optic and cranial nerves up to the seventh pair.

In further praise of Galen, Coxe goes so far as to intimate that he should be considered the founder of anatomy and not the Brussels physician, Vesalius, in the sixteenth century. Vesalius endeavored to expose the mistakes of Galen, presenting extracts of his work, but it is stated by his enemies that in order to enhance his own worth he erroneously translated the quotations. It is even said that when a Venetian printer employed Vesalius to correct the anatomical works of Galen, both in Latin and Greek, he rendered the text more corrupt than before. He imputed to Galen anatomical knowledge only from apes and brutes. This Coxe believes is proven to be contrary to facts, and it is asserted that Vesalius used animals for his anatomy of the larynx, tongue, and eyes. Galen was particularly interested in dissection of the human arm and hand because he believed this intricate anatomical mechanism made possible man's development to a higher state of civilization.

A question that could give rise to much argument is brought forth by Coxe concerning the priority of the discovery of the circulation. In one book entitled "Is the Blood Naturally Contained in the Arteries" he mentions that all teachings heretofore held to the opposite and that they contained air. Galen tied an artery and then opened between the ligatures showing that it did contain blood. He contended that there was a passage of the blood from the veins into the arteries. In this conception he antedates Harvey and in a manner prepared the way for him as the discoverer of the circulation. Galen believed there was blood in

both veins and arteries, dissimilar in constitution. He maintained that the heart filled the arteries and that they pulsated only by the force of the heart.

In another book Galen treats of the respiration, stating that something was discharged of a noxious character, of a burned or carbonized nature. He noticed that one artery arises from the heart and ramifies through the lungs; and that one rises from the left ventricle, spreads throughout the body and pulsates in unison with the heart. He speaks of the junction of the arteries and veins by anastomosis. The one weak link in Harvey's theory was that he did not know whether there was a true connection between the two or an indirect one, that is, by absorption from the tissues to the veins. It was reserved for Malpighi four years after Harvey's death to demonstrate the capillaries. Galen gave an accurate description of the valves of the heart. He knew the influence of the right side of the heart and the arterial character of the blood in the pulmonary veins, and the venous character of the blood in the pulmonary artery.

This does not in any way detract from the honor bestowed upon Harvey as the discoverer of the circulation. The resurrection of buried knowledge may be as important to the progress of science as the original work. It is interesting, however, to realize that our science goes back many centuries and that ancients were correct in many of their assumptions.

In the field of surgery and treatment, Galen believed more in assisting the natural forces of the body, claiming that nature brings about cures, the physician only supplementing her efforts. He relied much upon diet, baths, exercise, as well as upon the crude pharmaceutical concoctions that originated during his time.

Anyone interested in medical history will enjoy the perusal of Galen epitomized by Coxe, and those who are not so minded will undoubtedly have their interest aroused. It is wholesome for us to appraise our own knowledge and usefulness in the light of the past.

Livermore Sanitarium.

CLINICAL NOTES, CASE REPORTS AND NEW INSTRUMENTS

CONGENITAL HEART DEFECTS

WITH REPORT OF AN UNUSUAL CASE

By H. E. Butka, M. D.
Los Angeles

CONGENITAL heart defects and abnormalities are relatively frequent, ranging from the common patent foramen ovale to the less common defects in the structure of the heart and in the blood flow. The symptoms accompanying the various cardiac defects are surprisingly few, and it is not uncommon to find an anatomical condition which at first thought would seem to be inimical to life, giving very few subjective symptoms. The discovery of a defect awaits a careful study of the patient or frequently the pathologist's report at autopsy. Phillips,[1] Holman,[2] Reuben,[3] Steffen [3] and others, have discussed the various congenital malformations and anomalies. However, my failure to find in literature a description of an anatomical defect similar to that present in this case, and the unusual complications prompt me to present the following:

CASE REPORT

Patient R. W. S., age 31, American, machinist.

Personal History—Father died of diabetes. Patient suffered from measles, pertussis, and influenza. Habits were excellent. He worked quite hard and had suffered no loss of weight. Patient had complained of vertigo, palpitation and fatigue, and a considerable discharge from the nose each morning. A further study of patient's history revealed that he had suffered frequently with sore throat and colds. He had had "heart trouble" all his life, with pneumonia at the ages of 5, 12, and 19. He had also an attack of rheumatic fever six or seven years ago. Heart symptoms became worse at each attack.

Present Complaint—Patient entered White Memorial Hospital clinic May 7, 1927, complaining of pain over right eye, sore throat, and difficulty in talking. This pain over the right eye began suddenly about one week previous, and was of sharp and stabbing character but disappeared at night after sleeping. It was worse when the head was bent over, and at the time of examination the pain was constant and severe. The throat had become sore and the patient was hoarse.

Physical examination revealed a middle-aged man, apparently quite sick. Temperature, 98.8; pulse, 74; blood pressure, 80 systolic; weight, 150 pounds. The skin was slightly yellowish and the eyes revealed some jaundice. The breath was fetid, the gums were red, the tongue was coated, and the tonsils were enlarged and reddened. There was a whitish exudate over the surface of the tonsils and pharynx.

The phalanges were enlarged and club-shaped, and the nails showed marked cyanosis. There was also marked cyanosis of the ears, lips, and extremities. Examination of the heart region showed a diffuse apex beat in the sixth interspace, two centimeters to the left of the midclavicular line. There was a marked thrill transmitted to the axilla and over the sternal region; and a murmur accompanying the first sound which was apparently split at the apex, and was heard in the aortic and pulmonary areas.

Examination of the nose and throat revealed a definite exudate covering the tonsils, larynx, and epiglottis. X-ray report of the sinuses disclosed an involvement of the right frontal and left maxillary sinuses. He was then referred to the heart clinic for study as to advisability of the removal of the tonsils. The diagnosis returned was mitral stenosis and insufficiency; and tonsillectomy under local anesthetic to be followed by two weeks' rest in bed was advised.

Treatment—The tonsillectomy was done under local anesthesia, butain being used, the total time required being seven minutes. Following the tonsillectomy the patient was removed to the White Memorial Hospital and there suffered a rather severe hemorrhage. This was accompanied by shortness of breath, palpitation of the heart, and severe pain in the chest.

Following his entry into the hospital his temperature began to rise from 98 degrees on the 11th to 104 degrees at noon on the 12th. His blood count showed 100 per cent hemoglobin; 5,670,000 red cells; and 14,400 white cells; with a differential count of 79 per cent polynuclears. Consultations were held and a diagnosis of lobar pneumonia was made. All efforts at stimulation of the heart failed and the patient continued to grow worse, becoming delirious, and dying on the morning of May 13.

The *autopsy* performed immediately after death revealed the following:

Internal examination: Thorax upon opening revealed no free fluid in the pleural cavities and no